

HAZARD RANKING SYSTEM (HRS) DOCUMENTATION RECORD COVER SHEET

Name of Site: Beck's Lake

EPA ID No.: IND980904379

Contact Person

U.S. Environmental Protection Agency (EPA), Region V:

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Pathways, Components or Threats Not Scored

Ground Water Pathway: The ground water migration pathway has not been scored because, based on information available at this time, evaluation of the ground water migration pathway would not significantly affect the listing decision.

Surface Water Pathway: The Surface Water Pathway has not been scored at this time because, based on information available at this time, evaluation of the surface threat pathway would not significantly affect the listing decision.

Air Pathway: The air migration pathway has not been scored because, based on information available at this time, evaluation of the air migration pathway would not significantly affect the listing decision.

HRS DOCUMENTATION RECORD

Name of Site: Beck's Lake
Date Prepared: May 2013
EPA Region: V
Street Address*: Intersection of Washington and Falcon Streets
City, County, State, Zip Code: South Bend, Saint Joseph County, Indiana, 46619 (Figure 1) (Ref. 3, p. 1)
General Location in State: North-central portion of Indiana in the City of South Bend (Ref. 3, p. 1)
Topographic Map: U.S. Geological Survey 7.5-Minute Series Topographic Map of South Bend West, Indiana, Quadrangle, 1969, Photorevised 1986 (Ref. 3, p. 1)
Latitude*: 41° 40' 35.69" North (Ref. 3, p. 1; Ref. 4A, p. 1; 4B; Figure 2)
Longitude*: 86° 17' 51.05" West (Ref. 3, p. 1; Ref. 4A, p. 1; 4B; Figure 2)

The latitude and longitude listed above mark the approximate location of surface soil sample S6 collected from LaSalle Park Homes (Ref. 4A; 4B; Figure 2).

*The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area the Site is located. They represent one or more locations EPA considers to be part of the Site based on the screening information EPA used to evaluate the Site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A Site is defined as where a hazardous substance has been "deposited, stored, disposed, or placed, or has otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

Scores

Groundwater Migration Pathway	- Not Scored
Surface Water Migration Pathway	- Not Scored
Soil Exposure Pathway	- 100.00
Air Migration Pathway	- <u>Not Scored</u>
HRS SITE SCORE	50.00

WORKSHEET FOR COMPUTING HRS SITE SCORE

	<u>S</u>	<u>S²</u>
1. Groundwater Migration Pathway Score (S _{gw}) (from Table 3-1, line 13)	<u>NS</u>	---
2a. Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	<u>NS</u>	---
2b. Groundwater to Surface Water Migration Component (from Table 4-25, line 28)	<u>NS</u>	---
2c. Surface Water Migration Pathway Score (S _{sw}) (enter the larger of lines 2a and 2b as the pathway score)	<u>NS</u>	---
3. Soil Exposure Pathway Score (S _s) (from Table 5-1, line 22)	100.00	10,000.00
4. Air Migration Pathway Score (S _a) (from Table 6-1, line 12)	<u>NS</u>	---
5. Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		<u>10,000.00</u>
6. HRS Site Score Divide the value on line 5 by 4 and take the square root.		50.00

Note:

NS = Not Scored

TABLE 5-1 –SOIL EXPOSURE PATHWAY SCORESHEET				
Factor Categories and Factors		Maximum Value	Value Assigned	
Resident Population Threat				
Likelihood of Exposure:				
	1. Likelihood of Exposure	550		550
Waste Characteristics:				
	2. Toxicity	(a)	10,000	
	3. Hazardous Waste Quantity	(a)	10	
	4. Waste Characteristics	100		18
Targets:				
	5. Resident Individual	50	50	
	6. Resident Population:			
	6a. Level I Concentrations	(b)	890	
	6b. Level II Concentrations	(b)	NS	
	6c. Population (lines 6a + 6b)	(b)	890	
	7. Workers	15	NS	
	8. Resources	5	0	
	9. Terrestrial Sensitive Environments	(c)	0	
	10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)		940
Resident Population Threat Score				
	11. Resident Population Threat Score (lines 1 x 4 x 10)	(b)		9,306,000
Nearby Population Threat				
Likelihood of Exposure:				
	12. Attractiveness/Accessibility	100	NS	
	13. Area of Contamination	100	NS	
	14. Likelihood of Exposure	500	NS	NS
Waste Characteristics:				
	15. Toxicity	(a)	NS	
	16. Hazardous Waste Quantity	(a)	NS	
	17. Waste Characteristics	100		NS
Targets:				
	18. Nearby Individual	1	NS	
	19. Population Within 1 Mile	(b)	NS	
	20. Targets (lines 18 + 19)	(b)		NS
Nearby Population Threat Score				
	21. Nearby Population Threat (lines 14 x 17 x 20)	(b)		NS
Soil Exposure Pathway Score:				
	22. Pathway Score ^c (S _s), [lines (11+21)/82,500, Subject to max of 100]	100		100.00

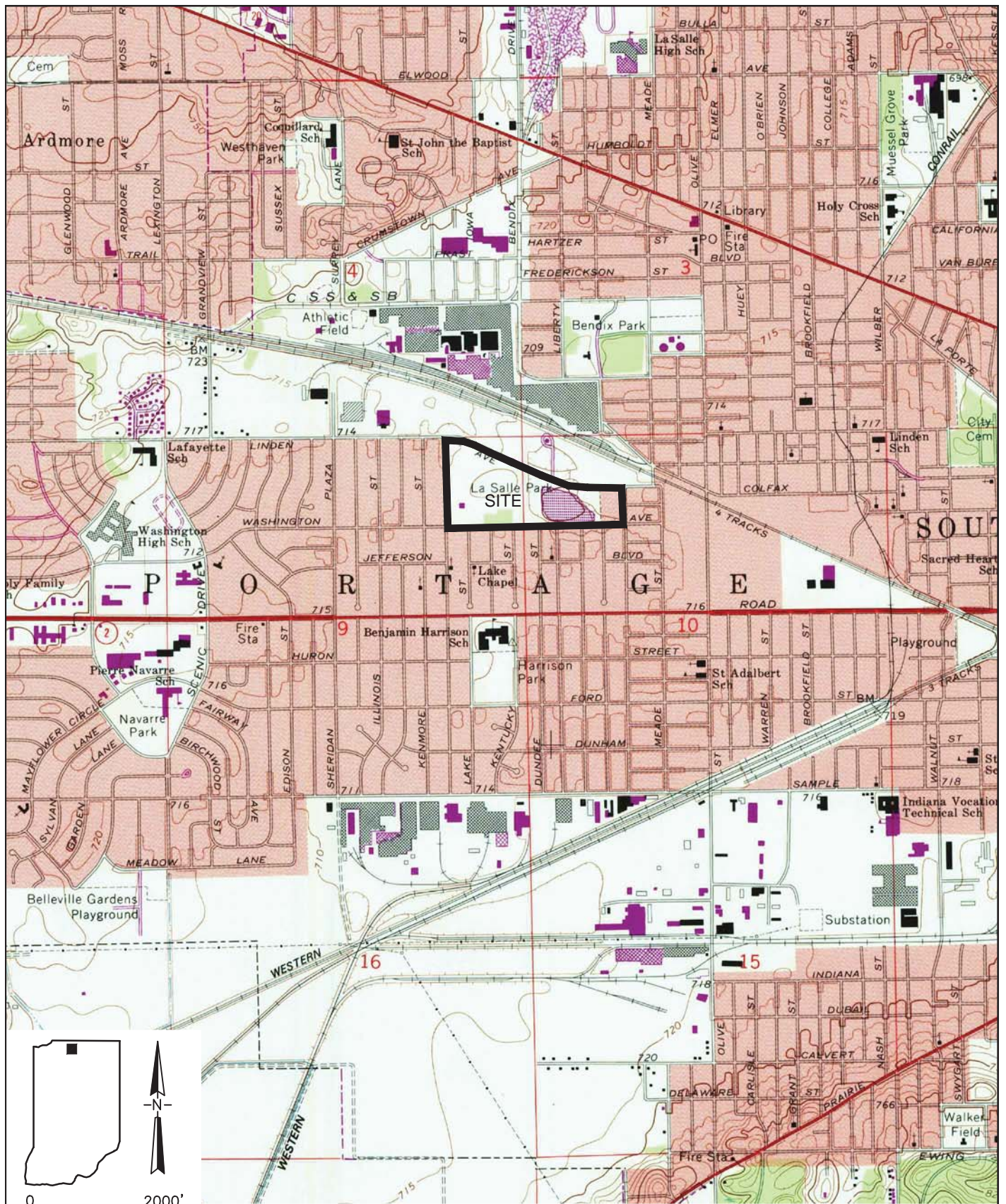
Notes:

^a Maximum value applies to waste characteristics category

^b Maximum value not applicable

^c Do not round to nearest integer

NS = Not scored



SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAPS.
SOUTH BEND WEST, INDIANA QUADRANGLE.

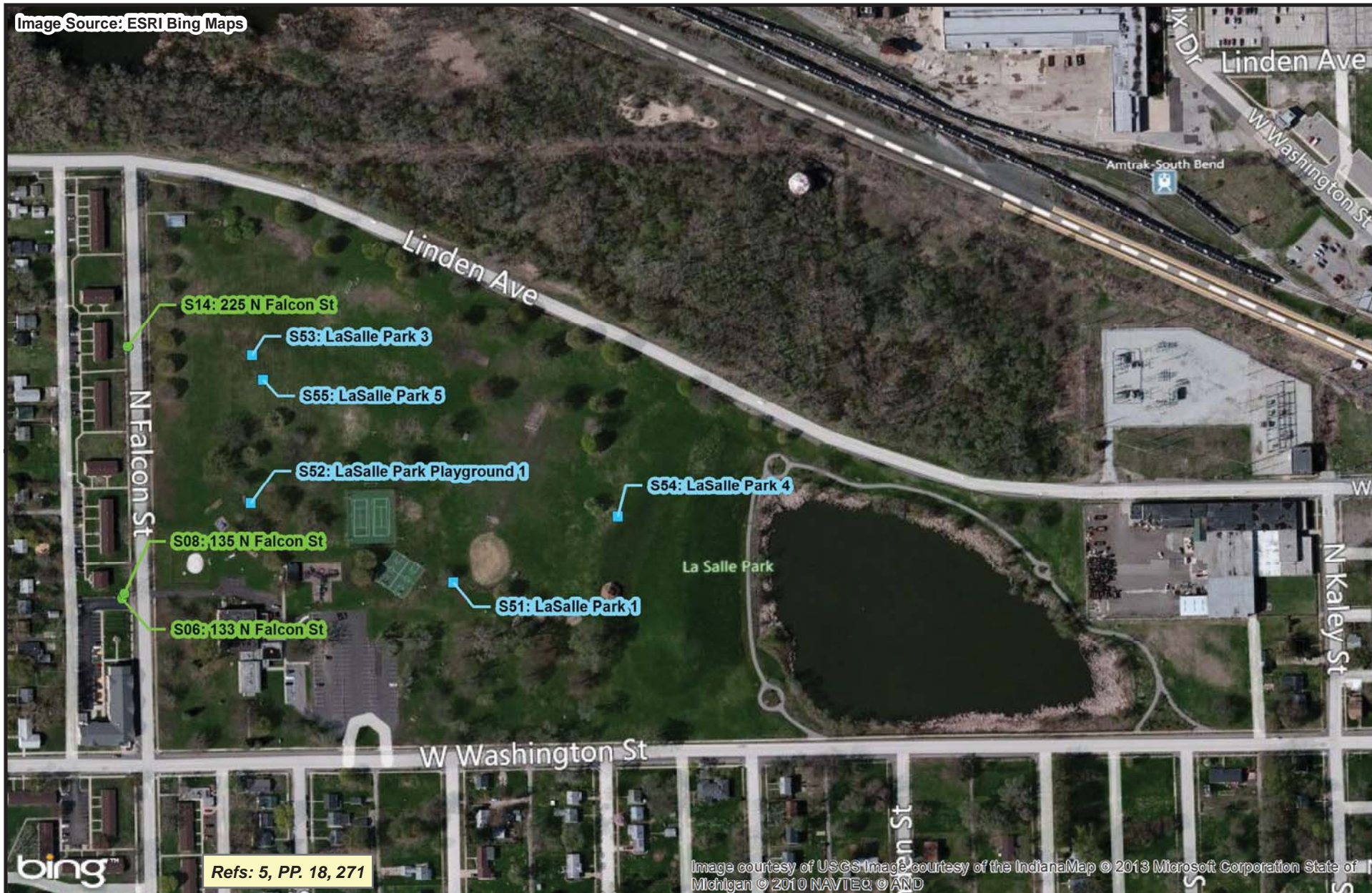


Prepared for:
U.S. EPA. REGION V
Contract No: EP-S5-06-04
TDD: S05-0008-1209-003
DCN: 1982-2A-BBRT



Prepared By:
WESTON
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Figure 1
Area Location Map
Beck's Lake
South Bend, Indiana



Legend

- AOC Sample Locations
(S06, S08, and S14)
- Source 1 Sample Locations
(S51, S52, S53, S54, and S55)

0 300
Feet



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U.S. EPA REGION V

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Figure 2
Source 1 and AOC A
Beck's Lake HRS
South Bend, St Joseph County, Indiana

REFERENCES

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- Note: A complete copy of the Hazard Ranking System, Final Rule, can be obtained at the Regional docket upon request.
2. EPA. Superfund Chemical Data Matrix (SCDM), SCDM Data Versions: Jan. 27, 2004 and March 31, 2012. Excerpt. 4 pages. A complete copy of SCDM is available at: <http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm>.
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- 4a. Weston Solutions Inc. (WESTON). Longitude and Latitude Calculations for Beck's Lake Site by Megan Abbot, October 31, 2012. 1 page.
- 4b. Weston Solutions Inc. (WESTON). Longitude and Latitude Location for Sample S6 on U.S. Geological Survey (USGS). 1969. 7.5-Minute Series Topographic Map: South Bend West, Indiana, Scale 1:24,000. Photorevised 1986. 1 page.
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11. IDEM, Affidavit prepared by Timothy R. Johnson, State Cleanup Section, IDEM. October 29, 2012. 1 page.
12. IDEM, Sampling Work Plan for Expanded Site Assessment prepared by Tim Johnson of IDEM. October 1, 2009. 19 pages.

13. IDEM, Sample Field Data Sheet, Beck's Lake site, South Bend, Indiana. October 5 and 6, 2009. 40 pages.
- 13a. IDEM, Affidavit prepared by Timothy Johnson, IDEM. February 19, 2013. 1 page
14. IDEM, Arsenic Concentration Map for Beck's Lake, South Bend, Indiana. Prepared by Kim Vedder. January 12, 2010. 1 page.
15. U.S. EPA, Contract Laboratory Program, Statement of Work for Inorganic Analysis, ILM05.3. March 2004. 93 pages.
16. U.S. EPA, ILM05.3 to ILM05.4 Summary of Changes. December 1, 2006. 5 pages.
17. U.S. EPA, CLP Analytical Results for Beck's Lake Site, SDG ME2QTO, ME2QW4, SDG ME2QX7. November 17, 2009. 154 pages.
- 17A. Weston Solutions, Inc., Percent Moisture Calculations performed by Omprakash S. Patel, January 25, 2013. 1 page.
- 17B. Weston Solutions, Inc., Sample Quantitation Limit Calculations performed by Omprakash S. Patel, January 25, 2013. 2 pages.
18. IDEM, 1938 Close-Up Aerial Photograph for Beck's Lake, South Bend, Indiana. 1 page.
19. IDEM, 1951 Close-Up Aerial Photograph for Beck's Lake, South Bend, Indiana. 1 page.
20. IDEM, 1957 Close-Up Aerial Photograph for Beck's Lake, South Bend, Indiana. 1 page.
21. WESTON Solutions Inc., Map showing 200-foot radius distance from sample locations S6, S8 and S14. October 30, 2012. 4 pages.
22. St. Joseph County, Parcel Information for LaSalle Park Homes, 1 page
23. Harding Lawson Associates, Tier II Criteria Comparison, Voluntary Site Investigation, AlliedSignal Industrial Complex, South Bend, Indiana. October 1999. 661 pages.
24. History of New Carlisle Test Facility, downloaded from Web on February 19, 2013. 1 page.

Link <http://www.bosch.us/content/language1/html/7666.htm>.
25. Elkhart County and St. Joseph County, Indiana GIS Website, Parcel information for area east of LaSalle Park, Elkhart County and St. Joseph County. 1 page.
26. Fax Transmittal from Gloria Buckhanon of LaSalle Park Homes to Mark Jaworski, of IDEM. January 29, 2012. 2 pages.

27. IDEM, Letter from Mark Jaworski regarding addresses located on North Falcon Street South Bend, Indiana, with 4-page attachment. 5 pages.
28. Toeroek Associates, Inc. Letter with attachments to Mike Rafati, U.S, EPA Region 5. Subject: Title Search – Beck’s Lake Site; Follow Up. January 31, 2013. 5 pages.
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1.0 SITE DESCRIPTION

The Beck's Lake site consists of a landfill and contaminated soil located at and near the intersection of Washington and Falcon Streets on the northwest side of South Bend, Indiana, and adjacent to LaSalle Park (Ref. 5, p.10). Portions of the current LaSalle Park were used as a dump and landfill from about 1938 through the mid-1950s (Refs. 5, p. 12; 6, p. 9). Numerous companies and individuals, including Bendix Corporation, reportedly dumped a variety of materials containing hazardous substances at this location (Ref. 5, pp. 12, 13, 284 through 289). Waste materials included, but were not limited to: asbestos, plating wastes, solvents, paint wastes, oils and sludges and foundry sand (Ref. 5, pp. 285-289). Foundry sand and hydroxide sludge contained, among other contaminants, arsenic (Refs. 5, p. 288; 7, pp.1-3). Aerial photographs from 1938 and 1951 appear to show fill material being dumped in the western half of what is now LaSalle Park (Ref. 5, p.13).

The area surrounding LaSalle Park consists mostly of older single- and multi-family residences in a typical urban setting (Ref. 5, p. 10, 12). Directly adjacent to LaSalle Park on the west across Falcon Street is a new complex of subsidized housing and apartments called LaSalle Park Homes (Ref. 5, p. 10, 12). The dumping area is evident on a 1951 historical aerial photograph of the area, extending to the edge of the partial road which is now Falcon Street and some truck paths extending beyond the edge of the partial road into the area that is now part of the LaSalle Park Homes (Ref. 19, p. 1). Therefore, it appears from historical aerial photographs that before the LaSalle Park Homes were built, the waste that was deposited in the Beck's Lake landfill could also have been deposited on the current LaSalle Park Homes property.

The area of concern includes the dump area and the area immediately surrounding LaSalle Park, to the west and south-southwest where levels of arsenic elevated above background levels were identified during the 2001 Brownfields Environmental Assessment and the 1996 initial Expanded Site Inspection (ESI) for the site (Ref. 5, p. 10; and Table 6 of this HRS documentation record). Results of the 2009 ESI (the ESI 2) included three soil samples at the LaSalle Park Homes with arsenic concentrations above background and above health-based

benchmarks (Table 10 of this HRS documentation record). The site score incorporates Level I contamination in the soil exposure pathway based on these three soil samples at the LaSalle Park Homes residential properties.

1.1 PREVIOUS INVESTIGATIONS

Beck's Lake was entered in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) in April 1984 (Ref. 5, p. 8). A Preliminary Assessment (PA) was completed in 1985 by the Indiana State Board of Health (Refs. 5, p. 8; 6, p. 73; 7, p. 1; 8, p.1). A Screening Site Inspection (SSI) was conducted on April 20, 1988 by Ecology and Environment, a U.S. EPA contractor (Ref. 6, p. 7). An ESI was conducted by U.S. EPA on March 8, 1996, resulting in a No Further Remedial Action Planned (NFRAP) designation (Ref. 5, pp. 8). Based on the findings of a Brownfields Environmental Assessment that was conducted in 2001 by the Indiana Department of Environmental Management (IDEM), the U.S. EPA gave approval to reopen the Site and a Site Reassessment was conducted on June 13, 2003 (Ref. 5, pp. 8, 9). Following the Site Reassessment, an ESI 2 was conducted at Beck's Lake (Ref. 5, pp. 8, 9).

The SSI was conducted to determine whether Target Compound List (TCL) compounds or Target Analyte List (TAL) analytes were present at the Site (Ref. 6, p.7). The SSI included collection of one subsurface soil sample near the man-made hill at the park, one surface soil sample from the west side of the property, and three sediment samples from within Beck's Lake (Ref. 6, p. 15). The samples were analyzed for U.S. EPA TCL compounds by Cenref Labs, Brighton, Colorado, and TAL analytes by Post Buckley Schuh & Jernigan of Orlando, Florida (Ref. 6, pp. 15, 17). TCL compounds and TAL analytes were detected in soil samples at concentrations exceeding background levels (Ref. 6, p. 25). Specifically, fluoranthene was detected at a concentration of 26,000 micrograms per kilogram ($\mu\text{g/kg}$), pyrene was detected at 21,000 $\mu\text{g/kg}$, chrysene was detected at 14,000 $\mu\text{g/kg}$, chromium was detected at 34 milligram per kilogram (mg/kg), lead was detected at 634 mg/kg , and manganese was detected at 957 mg/kg (Ref. 6, p. 25).

In October 2001, IDEM collected six surface soil samples from the property, four surface soil samples from private properties, three sediment samples from Beck's Lake, three surface water samples from Beck's Lake, and one off-property background surface soil sample (Ref. 9, pp. 17 - 19) as part of a Brownfields Environmental Assessment. Soil and sediment samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), metals and cyanide by U.S. EPA Contract Laboratory Program (CLP) laboratories (Ref. 9, p.20). Soil and sediment samples were analyzed for VOCs, SVOCs, and pesticides/PCBs by EnviroSystems Inc. of Columbia, Maryland (Ref. 9, p.20). Surface water organic samples were analyzed by SHEALY in California (Ref. 9, p.20). The inorganics (metals and cyanide) were analyzed by Chemtech Consulting Group, Englewood, New Jersey (Ref. 9, p.20). Arsenic was detected in several soil/sediment samples at concentrations ranging from 4.8 mg/kg to 20.9 mg/kg exceeding the IDEM Risk Based Closure Residential Default Closure Level of 3.9 mg/kg (Ref. 9, pp.21, 35, 36).

In June 2003, IDEM conducted a Site Reassessment of the LaSalle Park/Beck's Lake Site (Ref. 10, p.10). During the reassessment, 22 surface soil samples (including one potential background soil sample and one duplicate) were collected (Ref. 10, pp. 16, 17). The samples were analyzed for metals by Ceimic Corporation, Narragansett, Rhode Island (Ref. 10, pp. 62, 63). Metals exceeding the site-specific background sample concentrations by three times include arsenic, lead, and chromium (Ref. 10, p. 26).

In October 2009, 36 surface soil samples (including six background soil samples) were collected from Beck's Lake and surrounding residential properties (Ref. 5, p. 15). Soil samples were analyzed by EPA CLP laboratory, A4 Scientific located in The Woodlands, Texas (Ref. 17, pp. 11, 12, 63, 64, 109, 110). All samples were analyzed for metals and cyanide using CLP SOW ILM05.4 (Ref. 5, pp. 127, 128). Surface soil sample S34 was mistakenly identified as background sample in the 2009 ESI 2 Report (Ref. 5, p. 18). Arsenic was detected in the soil samples collected from the LaSalle Park Homes area at concentrations exceeding three times the highest concentrations detected in the background surface soil samples (see Section 5.0.1 of this HRS documentation record).

2.0 SOURCE DESCRIPTION

2.2 Source Characterization

Source Description: Source 1 – Landfill

Beck's Lake property was used as a dump into the 1950s (Refs. 5, p. 12; 6, p.9). Historic aerial photographs indicate that dumping began at the Site as early as 1938 (Ref. 18, p. 1). A 1984 103(c) notification to the United States Environmental Protection Agency (U.S. EPA) from Bendix Corporation, a manufacturing facility for the automotive/aerospace industry, revealed that Bendix dumped a variety of hazardous wastes at the Beck's Lake landfill until the mid-1950s (Ref. 5, pp. 12, 13, 285 through 289). Materials listed on the 103(c) notification and attachments included, but were not limited to: asbestos, plating wastes, solvents, paint wastes, oils and sludges, and foundry sand. Foundry sand and hydroxide sludge contained, among other contaminants, arsenic (Refs. 5, p. 288; 7 pp. 1-3). In a companion notification to the St. Joseph County Health Department, Bendix indicated that it, together with numerous other companies and individuals, landfilled hazardous substances at Beck's Lake (Ref. 5, p. 284). During the IDEM 2009 ESI 2, the material at a depth of 2-5 feet in boring 5 is described to contain glass suggesting waste material within this depth (Ref. 13, p.38). Observations made during this investigation revealed that the subsurface material in the LaSalle Park was of non-uniform color and contained glass and other unidentifiable foreign debris (Ref 13A. p.1). Aerial photographs from 1938 and 1951 appear to show fill material being dumped near the western half of the park near what is now the parking area/playground area for the community center at the park and to the north toward Linden Road (Ref. 5, p. 13). This area used to be a lake called LaSalle Lake (Ref. 5, p. 13). No documentation could be found regarding what happened to the lake but the early aerial photographs show a faint outline of where the lake may have been (Ref. 5, p. 13).

The samples listed in Table 1 were collected from LaSalle Park during the IDEM October 2009 ESI 2 (Refs. 5, pp. 15, 18; 13, pp. 34-39; 14, p.1) (see Figure 2 of this HRS documentation record). Samples were collected from the 2 and 7 feet bgs subsurface horizon (Ref. 5, p. 18). Field logs are provided in Reference 13, pages 34 through 39. Chain-of-custody records are

provided in Reference 17, pages 109 and 110. The locations of the samples collected from the LaSalle Park are depicted on Reference 14, page 1. The description of waste samples is provided in Table 1 below and References 5, page 18; and 13, pages 34 through 39.

Table 1: Waste Sample Description – October 2009 LaSalle Park				
Sample ID/ CLP ID	Sample Location	Depth (feet bgs)	Date Sampled	References
S51/ME2QY4	Taken from boring 1 west of backstop, west of basketball courts, at LaSalle Park	6-7	10/6/2009	Refs. 5, pp. 18, 49, 197, 267; 13, p.34; 14, p. 1
S52/ME2QY5	Taken from boring 2, playground area west edge LaSalle Park	2-4	10/6/2009	Refs. 5, pp. 18, 51, 197, 267; 13, p.35; 14, p. 1
S53/ME2QY7	Taken from boring 3, depressional area on the north west edge of LaSalle Park	3-5	10/6/2009	Refs. 5, pp. 18, 198, 267; 13, p. 36; 14, p.1
S54/ME2QY8	Taken from boring 4	4-5	10/6/2009	Refs. 5, pp. 18, 198, 267; 13, p.37; 14, p. 1
S55/ME2QY9	Taken from boring 5	2-5	10/6/2009	Refs. 5, pp. 18, 51, 198, 267; 13, p.38; 14, p. 1
S56/ME2QY6	Taken from boring 2, playground area west edge LaSalle Park	2-5	10/6/2009	Refs. 5, pp. 18, 197, 267; 13, p. 39; 14, p.1

Notes:

bgs = Below ground surface

CLP = Contract Laboratory Program

ID = Identification number

Waste Sample Concentrations

The samples listed in Table 2 were collected during the October 2009, ESI 2 of LaSalle Park (Refs. 5, p. 15; 14, p. 1). Samples were analyzed by EPA CLP laboratory, A4 Scientific, The Woodland, Texas (Ref. 17, pp. 101, 109, 110). All samples were analyzed for metals and

cyanide using CLP SOW ILM05.4 (Ref. 5, pp. 4, 56, 128, 192; 17, p. 111). The CRQLs are listed on page 93 of Reference 15 for Method ILM05.3. According to information presented on pages 1 through 5 for Reference 16, the CRQL for lead and arsenic were not changed for ILM05.4 and are the same as ILM05.3. The method detection limits and CRQLs are also listed on pages 45, 92, and 145 of Reference 17. The SQL for each analytical parameter listed in Table 2 was calculated and the calculations are presented in Reference 17B. Percent moisture for each sample was calculated and the calculations are presented in Reference 17A. The material at a depth of 2-5 feet in boring 5 is described to contain glass suggesting waste material within this depth (Ref. 13, p.38). The subsurface material in the LaSalle Park was of non-uniform color and contained glass and other unidentifiable foreign debris (Ref. 13A, p.1).

The hazardous chemical constituents detected in the waste samples are summarized in Table 2 below.

TABLE 2: Analytical Results Waste Samples – October 2009 LaSalle Park					
Sample ID/ CLP ID	Hazardous Substance	Concentration mg/kg	Percent Moisture	CRQL/ MDL/SQL (mg/kg)	References
S51/2QY4	Cadmium	149	11.7	0.5/0.16/0.19	Refs. 5, pp. 21, 191-195, 197; 14, p. 1; 15, p. 93; 16, pp. 1-5; 17, pp. 99-105, 109, 111, 121, 145; 17A, p. 1; 17B, pp. 1, 2
	Copper	736		2.5/0.7/0.95	
	Lead	1,860		1.0/0.38/0.28	
	Zinc	657		6.0/2.2/2.59	
S52/2QY5	Cadmium	6.4	12.2	0.5/0.16/0.19	Refs. 5, pp. 21, 191-195, 197; 14, p. 1; 15, p. 93; 16, pp. 1-5; 17, pp. 99-105, 109, 111, 122, 145; 17A, p. 1; 17B, pp. 1, 2
	Chromium	36.3		1.0/0.37/0.36	
	Copper	987		2.5/0.7/0.95	
	Lead	1,030		1.0/0.38/0.28	
	Nickel	53.9		4.0/1.2/1.49	
	Zinc	2,130		6.0/2.2/2.58	
S53/2QY7	Cadmium	19.6	36.0	0.5/0.16/0.19	Refs. 5, pp. 21, 191-195, 198; 14, p. 1; 15, p. 93; 16, pp. 1-5; 17, pp. 99-105, 110, 111, 124, 145; 17A, p. 1; 17B, pp. 1, 2
	Chromium	59.6		1.0/0.37/0.36	
	Copper	567		2.5/0.7/0.95	
	Lead	2,390		1.0/0.38/0.28	
	Nickel	206		4.0/1.2/1.49	
	Zinc	1,960		6.0/2.2/2.58	
S54/2QY8	Cadmium	5.2	15.5	0.5/0.16/0.19	Refs. 5, pp. 21, 191-195, 198; 14, p. 1; 15, p. 93; 16, pp. 1-5; 17, pp. 99-105, 110, 111, 125, 145; 17A, p. 1; 17B, pp. 1, 2
	Chromium	53		1.0/0.37/0.36	
	Copper	169		2.5/0.7/0.95	
	Lead	730		1.0/0.38/0.28	
	Nickel	38.7		4.0/1.2/1.49	
	Zinc	853		6.0/2.2/2.58	
S55/2QY9	Cadmium	6.6	25.0	0.5/0.16/0.19	Refs. 5, pp. 21, 191-195, 198; 14, p. 1; 15, p. 93; 16, pp. 1-5; 17, pp. 99-105, 110, 111, 126, 145; 17A, p. 1; 17B, pp. 1, 2
	Chromium	39.7		1.0/0.37/0.36	
	Copper	271		2.5/0.7/0.95	
	Lead	1,010		1.0/0.38/0.28	
	Nickel	55.1		4.0/1.2/1.49	
	Zinc	1,040		6.0/2.2/2.58	
S56/2QY6	Arsenic	24.5	23.2	1.0/0.36/0.44	Refs. 5, pp. 21, 191-195, 197; 14, p. 1; 15, p. 93; 16, pp. 1-5; 17, pp. 99-105, 109, 111, 123, 145; 17A, p. 1; 17B, pp. 1, 2

Notes:

CLP = Contract Laboratory Program

CRQL = Contract Required Quantitation Limit, the substance-specific level that a CLP laboratory must be able to routinely and reliably detect in specific sample matrices. The CRQL is not the lowest detectable level achievable, but rather the level that a CLP laboratory should reliably quantify (Ref. 1, Sec. 1.1).

ID = Identification number

MDL = Method Detection Limit, the lowest quantity of hazardous substance that a method can detect reliably in either a sample or blank (Ref. 1, Sec. 1.1).

ID = Identification number

MDL = Method Detection Limit, the lowest quantity of hazardous substance that a method can detect reliably in either a sample or blank (Ref. 1, Sec. 1.1).

SQL = Sample Quantitation Limit, the quantity of a substance that can be reasonably quantified given the limits of detection for the methods of analysis and sample characteristics that may affect quantitation (e.g. dilution, concentration) (Ref. 1, Sec. 1.1).

mg/kg = milligram per kilogram

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Containment Description

Gas release to air:	Not scored
Particulate release to air:	Not scored
Release to ground water:	Not scored
Release via overland migration and/or flood:	Not scored

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1.1. Hazardous Constituent Quantity

Description

The hazardous constituent quantity for Source No. 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.1). There are insufficient historical and current data (Manifests, PRP records, State records, permits, waste concentration data, etc.) available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source No. 1 with reasonable confidence.

Hazardous Constituent Quantity Assigned Value: NS

2.4.2.1.2. Hazardous Wastestream Quantity

Description

The hazardous wastestream quantity for Source No. 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.1). There are insufficient historical and current data (Manifests, PRP records, State records, permits, etc.) available to adequately calculate the total mass of all hazardous wastestreams and

CERCLA pollutants and contaminants in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous wastestream quantity for Source No. 1 with reasonable confidence.

2.4.2.1.3. Volume

Description

The information available is not sufficient to evaluate source volume. A sufficient number of samples were not collected that would statistically represent the range of contaminant concentrations throughout the depth of the source, therefore, source volume is not scored (NS). As a result, the evaluation of hazardous waste quantity proceeds to the evaluation of area (Ref. 1, Section 2.4.2.1.3).

Sum (yd³/gal):

Equation for Assigning Value (Ref. 1, Table 2-5):

Volume Assigned Value: NS

2.4.2.1.4. Area

Description

The area of Source 1 was calculated using the 5 samples collected in this source during the IDEM 2009 ESI 2: samples S51, S52, S53, S54 and S55 (Ref. 29).

Sum (ft²): 141,750

Equation for Assigning Value (Ref. 1, Table 2-5): $141,750 / 3,400 = 41.691176$

Area Assigned Value: 41.691176

2.4.2.1.5. Source Hazardous Waste Quantity Value

Highest assigned value assigned from Ref. 1, Table 2-5: 41.691176

2.0 SOURCE DESCRIPTION

2.2 Source Characterization

Source Description: Source 2 – Contaminated Soil

Please see Soil Exposure Pathway, Area of Observed Contamination A (AOC A) for characterization of this source.

SUMMARY OF SOURCE DESCRIPTIONS

Source No.	Source Hazardous Waste Quantity Value	Source Hazardous Constituent Quantity Complete? (Y/N)	Containment Factor Value by Pathway				
			Ground Water (GW) (Ref. 1, Table 3-2)	Surface Water (SW)		Air	
				Overland/flood (Ref. 1, Table 4-2)	GW to SW (Ref. 1, Table 3-2)	Gas (Ref. 1, Table 6-3)	Particulate (Ref. 1, Table 6-9)
1	41.691176	N	NS	NS	NS	NS	NS
2	Unknown, > 0	N	NS	NS	NS	NS	NS

5.0 SOIL EXPOSURE PATHWAY

5.0.1 General Considerations

The area of observed soil contamination is documented in accordance with Section 5.0.1 of the HRS (Ref. 1, Section 5.0.1). The area of observed soil contamination is delineated by the locations of soil samples documenting concentrations of hazardous substances at three times above background concentration or above sample detection limits if the background is non-detect, and the area lying between those locations, minus the areas covered by impenetrable surfaces (such as houses, roads, and sidewalks) (Ref. 1, Section 5.0.1).

Letter by which this area is to be identified: A

Name and description of the area: Soil Samples S6, S8 and S14 collected from the LaSalle Park Homes (Area of observed contamination A)

Location of the area, with reference to a map of the site: The area (surface soil samples S6, S8 and S15) is shown on Figure 2 provided with this HRS documentation record

IDEM LaSalle Park/Beck's Lake Expanded Site Inspection Report 2

The investigation-specific background soil samples listed in Table 3 were collected during the IDEM October 2009, ESI 2 of LaSalle Park/Beck's Lake (Ref. 5, pp. 8, 17, 18). The background soil samples for this investigation were collected from the residential properties away from Beck's Lake (Ref. 5, p. 18). The background soil samples were collected from the upper 6 inches of the soil horizon (Ref. 5, p. 18). These locations were chosen to represent background conditions because: (1) the soil type at the background sample locations are similar to the soil types at the locations of samples collected from Area of Observed Contamination (AOC) A; (2) these sampling locations are at a distance away from Beck's Lake and appear to be minimally affected by operations at Beck's Lake; (3) samples were collected within same time period (October 5 and 6, 2009), therefore, under the same weather conditions; (4) samples were collected at the same depth of 0 to 6-inches; (5) samples were collected by the same sampling team and samples were collected in accordance with the approved Work Plan (Refs. 5, p. 18; 12, pp. 1-19; 13, pp. 1-14).

Background and contaminated soil samples were collected during the same sampling event, from the same type of soil (black to dark brown sandy loam or sandy soil), by the same sampling team and therefore using similar sampling procedures (Ref. 13, pp. 5, 14, 24, 25, 26, 28, 29, 30). The background surface soil samples were collected in accordance with the approved 2009 IDEM ESI 2 Work Plan for Beck's Lake (Ref. 12, p. 7). The locations of the background soil samples are described in Reference 5, page 18 and depicted in Reference 14, page 1. Chain-of-custody records are provided in Reference 17, pages 64 and 109. Field logs are provided in Reference 13, pages 24 through 26 and 28 through 30. The description of each background soil sample is provided in Table 3 below.

Table 3: AOC A Background Soil Sample Description – October 6, 2009				
Sample ID/ CLP ID	Sample Location	Depth (inches bgs)	Date Sampled	References
S31/ME2QX4	Collected from bare area, south side of the front yard, approximately 2,800 feet southeast of the park.	0-6	10/6/2009	Refs. 5, pp. 18, 133; 13, p. 24; 14, p.1
S32/ME2QX5	Collected from south side of back yard near chain link fence, approximately 2,480 feet south of the park.	0-6	10/6/2009	Refs. 5, pp. 18, 134; 13, p. 25; 14, p.1
S35/ME2QX8	Collected from a residential yard, approximately 3,280 feet west of the park.	0-6	10/6/2009	Refs. 5, pp. 18, 196; 13, p. 28; 14, p.1
S36/ME2QX9	Collected from a residential yard, approximately 3,120 feet north of the park.	0-6	10/6/2009	Refs. 5, pp. 18, 196; 13, p. 29; 14, p.1
S37/ME2QY0	Collected from a residential yard, approximately 3,680 feet northwest of the park.	0-6	10/6/2009	Refs. 5, pp. 18, 196; 13, p. 30; 14, p.1

Notes:

AOC = Area of Observed Contamination

bgs = Below ground surface

CLP = Contract Laboratory Program

ID = Identification number

Background Concentrations

The investigation-specific background soil samples listed in Table 4 were collected by IDEM during the October 2009, ESI 2 of LaSalle Park/Beck's Lake investigation (Ref. 5, p. 15, 18). Soil samples were analyzed by EPA CLP laboratory, A4 Scientific Englewood, New Jersey (Ref. 17, pp. 55, 64, 101, 109). All samples were analyzed for metals and cyanide using CLP SOW ILM05.4 (Refs. 5, pp. 127, 128, 191, 192; 17, pp. 56, 102). The contract-required quantitation limits (CRQL) are listed on page 93 of Reference 15 for Method ILM05.3. According to information presented on pages 1 through 5 for Reference 16, the CRQLs for lead and arsenic were not changed for ILM05.4 (the updated SOW from December 2006), and are the same as ILM05.3. The CRQLs and method detection limits are listed in Reference 17, pages 45, 92, and 145. The SQL for each analytical parameter listed in Table 4 was calculated and the calculations are presented in Reference 17B. Percent moisture for each sample was calculated and the calculations are presented in Reference 17A. The highest arsenic concentration in the background soil samples was 9.7 mg/kg in samples S35 and S36 (Ref 5, p. 196).

Surface soil sample S34 was mistakenly identified as background sample in 2009 ESI 2 Report (Refs. 5, p. 18 ; 11, p. 1). The initially designated background soil sample S33 appears to be much closer to the AOC and therefore, is also not considered as a background sample.

TABLE 4: Analytical Results for AOC A Background Soil Samples – October 2009					
Sample ID/ CLP ID	Hazardous Substance	Concentration mg/kg	Percent Moisture	CRQL/MDL/SQL mg/kg	References
S31/ME2QX4	Arsenic	2.7	14.1	1/0.36/0.39	Refs. 5, pp. 133; 13, p. 24;14, p.1; 15, p. 93; 16, pp. 1-5;17, pp. 55-58, 61, 64- 66, 77, 92; 17A, p.1; 17B, pp.1, 2
S32/ME2QX5	Arsenic	3.4	23.2	1/0.36/0.43	Refs. 5, pp. 134; 13, p. 25;14, p.1; 15, p. 93; 16, pp. 1-5; 17, pp. 55-58, 62, 64-66, 78, 92; 17A, p.1; 17B, pp.1, 2
S35/ME2QX8	Arsenic	9.7	36.4	1/0.36/0.53	Refs. 5, pp. 196 ; 13, p. 28;14, p.1; 15, 93; 16, pp. 1-5; 17, pp. 101-106, 109, 111, 115, 145; 17A, p.1; 17B, pp.1, 2
S36/ME2QX9	Arsenic	9.7	17.2	1/0.36/0.40	Refs. 5, pp. 196 ; 13, p. 29;14, p.1; 15, 93;16, pp. 1-5; 17, pp. 101-106, 109, 111, 116, 145; 17A, p.1; 17B, pp.1, 2
S37/ME2QY0	Arsenic	7.9	20.6	1/.036/0.42	Refs. 5, pp. 196; 13, p. 30;14, p.1; 15, 93;16, pp. 1-5; 17, pp. 101-106, 109, 111, 117, 145; 17A, p.1; 17B, pp.1, 2

Notes:

AOC = Area of observed contamination

CLP = Contract Laboratory Program

CRQL = Contract Required Quantitation Limit, the substance-specific level that a CLP laboratory must be able to routinely and reliably detect in specific sample matrices. The CRQL is not the lowest detectable level achievable, but rather the level that a CLP laboratory should reliably quantify (Ref. 1, Sec. 1.1).

ID = Identification number

MDL = Method Detection Limit, the lowest quantity of hazardous substance that a method can detect reliably in either a sample or blank (Ref. 1, Sec. 1.1).

SQL = Sample Quantitation Limit, the quantity of a substance that can be reasonably quantified given the limits of detection for the methods of analysis and sample characteristics that may affect quantitation (e.g. dilution, concentration) (Ref. 1, Sec. 1.1).

mg/Kg = milligram per kilogram

Contaminated Samples

The soil samples listed in Table 5 were collected from the residential properties during the IDEM October 2009 ESI 2 (Refs. 5, pp. 15, 17; 13, pp. 7, 9, 10, 14; 14, p.1) (see Figure 2 of this HRS documentation record). Soil samples were collected from the 0 to 6 inches bgs soil horizon (Ref. 5, p. 17). Field logs are provided in Reference 13, pages 7, 9, 10 and 14. Chain-of-custody records are provided in Reference 13, pages 11 and 63. The locations of the soil samples collected from the residential properties are depicted on Reference 14, page 1. The description of contaminated soil samples is provided in Table 5 below and References 5, page 17; and 13, pages 7, 9, 10 and 14.

Table 5: AOC Contaminated Soil Sample Description – October 2009 LaSalle Park Homes				
Sample ID/ CLP ID	Sample Location	Depth (inches bgs)	Date Sampled	References
S6/2QT6	Soil sample collected from LaSalle Park Homes, Senior residence, grassy strip on north boundary	0-6	10/6/2009	Refs. 5, pp. 17, 61; 13, p.7; 14, p. 1
S8/2QT8 ¹	Soil sample collected from LaSalle Park Homes, Senior residence, grassy strip on north boundary	0-6	10/6/2009	Refs. 5, pp. 17, 61; 13, p.9; 14, p. 1
S14/2QW4	Soil sample collected from front yard of a residence near the LaSalle Park	0-6	10/6/2009	Refs. 5, pp. 7, 132; 13, p. 14; 14, p.1

Notes: ¹ A duplicate sample S9/2QT9 was also collected at this location (Ref. 5, p. 17; 13, pp. 9, 10; 17, p. 11).

AOC = Area of observed contamination

bgs = Below ground surface

CLP = Contract Laboratory Program

ID = Identification number

Contaminated Sample Concentrations

The soil samples listed in Table 6 were collected during the October 2009, ESI 2 of LaSalle Park/Beck's Lake (Refs. 5, p. 15; 14, p. 1). Soil samples were analyzed by EPA CLP laboratory, A4 Scientific Englewood, New Jersey (Ref. 17, pp. 3, 11, 55, 63). All samples were analyzed for metals and cyanide using CLP SOW ILM05.4 (Ref. 5, pp. 4, 56, 128, 192). The CRQLs are listed on page 93 of Reference 15 for Method ILM05.3. According to information presented on pages 1 through 5 for Reference 16, the CRQLs for lead and arsenic were not changed for ILM05.4 and are the same as ILM05.3. The method detection limits and CRQLs are also listed on pages 45, 92, and 145 of Reference 17. The SQL for each analytical parameter listed in Table

6 was calculated and the calculations are presented in Reference 17B. Percent moisture for each sample was calculated and the calculations are presented in Reference 17A.

Arsenic concentrations ranged from 2.7 to 9.7 mg/kg in the five background samples (S31, S32, S35, S36 and S37) collected during the ESI 2 (Refs. 5, pp. 133, 134, 196; 17, pp. 61, 62, 64, 77-76, 106, 109, 115-117). The highest concentration of arsenic (9.7 mg/kg) was detected in the background samples S35 and S36 (Refs. 5, pp. 196, 17, pp. 115, 116). Three times the highest background concentration for arsenic is 29.1 mg/kg (3 times 9.7 mg/kg). The hazardous chemical constituents in surface soil samples that exceeded three times the highest concentrations detected in the background samples are listed in Table 6 below.

TABLE 6: Analytical Results for AOC A Soil Sample – October 2009 LaSalle Park Homes					
Sample ID/ CLP ID	Hazardous Substance	Concentration mg/kg	Percent Moisture	CRQL/ MDL/SQL (mg/kg)	References
S6/2QT6	Arsenic	34.3	23.1	1/0.36/0.44	Refs. 5, pp. 20, 39, 55-59, 61; 15, p. 93; 16, pp. 1-5; 17, pp. 3-7, 9, 11, 13, 22, 45; 17A, p.1; 17B, pp.1, 2
S8/2QT8 ¹	Arsenic	29.4	21.4	1/0.36/0.43	Refs. 5, pp. 20, 55-59, 61; 15, p. 93; 16, pp. 1-5; 17, pp. 3-7, 9, 11, 13, 24, 45; 17A, p.1; 17B, pp.1, 2
S14/2QW4	Arsenic	30.8	21.1	1/0.36/0.43	Refs. 5, pp. 20, 127-132; 15, p. 93; 16, pp. 1-5; 17, pp. 55-59, 63, 65, 68, 92; 17A, p.1; 17B, pp.1, 2

Notes: ¹ – The duplicate sample S9 collected at this location had higher concentration (32.7 mg/kg) than the investigative sample S8 (Refs. 5, pp. 17; 13, p. 10 17, pp. 9, 11, 25)

AOC = Area of observed contamination

CLP = Contract Laboratory Program

CRQL = Contract Required Quantitation Limit, the substance-specific level that a CLP laboratory must be able to routinely and reliably detect in specific sample matrices. The CRQL is not the lowest detectable level achievable, but rather the level that a CLP laboratory should reliably quantify (Ref. 1, Sec. 1.1).

ID = Identification number

MDL = Method Detection Limit, the lowest quantity of hazardous substance that a method can detect reliably in either a sample or blank (Ref. 1, Sec. 1.1).

SQL = Sample Quantitation Limit, the quantity of a substance that can be reasonably quantified given the limits of detection for the methods of analysis and sample characteristics that may affect quantitation (e.g. dilution, concentration) (Ref. 1, Sec. 1.1).

mg/kg = milligram per kilogram

Attribution

A 1984 103(c) notification to the U.S. EPA from Bendix Corporation, a manufacturing facility for the automotive/aerospace industry, along with a similar notification to the St. Joseph County Health Department, revealed that Bendix, together with other numerous companies and individuals, dumped hazardous substances at the Beck's Lake landfill "at some time during the past 40 years," i.e., up to the 1950s (Refs. 5, pp. 12, 13, 284). The waste disposed of at Beck's Lake included asbestos, plating wastes, solvents, paint wastes, organics, inorganics, acids, bases, oils and sludge, and foundry sand that potentially contained arsenic and other contaminants (Refs. 5, pp.13, 285-289). Based on the available analytical results, the Bendix waste such as hydroxide sludge and foundry sand contained arsenic; therefore, the waste disposed by Bendix Corporation at the Beck's Lake Site most likely contained arsenic (Refs. 5, p. 288; 7, pp.1-3).

The historical aerial photographs of the area show that Falcon Street was a partial street that ended in the middle of what was then the contiguous property that included the current LaSalle Park/Beck's Lake and the LaSalle Park Homes (Refs. 5, p. 25; 18, p. 1; 19, p. 1; 20, p. 1). The dumping area is evident on the 1951 historical aerial photograph, extending to the edge of the partial road which is now Falcon Street and some truck paths extending beyond the edge of the partial road to the area that is now part of the LaSalle Park Homes (Refs. 5, p. 25; 19; p. 1;). Therefore, it appears from historical aerial photographs that before the LaSalle Park Homes were built, the waste that was deposited in the western portion of LaSalle Park/Beck's Lake was also likely deposited in the current LaSalle Park Homes property (Refs. 5, pp. 25, 26; 18, p. 1; 19; p. 1; 20, p. 1).

The contamination detected on the LaSalle Park Homes property could potentially be related to LaSalle Park because cadmium, copper, chromium, lead, nickel and zinc detected in the waste samples collected from LaSalle Park were also detected at significantly high concentrations in surface soil samples S6 (cadmium and lead), S8 (cadmium, lead and zinc), S13 (cadmium, chromium, copper, lead, zinc, nickel) and S14 (cadmium, lead and zinc) collected from the LaSalle Park Homes property (Ref. 5, p. 20 and Table 2 of this HRS documentation record). The subsurface material in the LaSalle Park was of non-uniform color and contained glass and other unidentifiable foreign debris (Ref. 13A, p.1). Therefore, waste deposited in the LaSalle Park could potentially have been deposited on the LaSalle Park Homes property. The material at a

depth of 2-5 feet in boring 5 is described to contain glass suggesting waste material within this depth (Ref. 13, p.38).

Site-Wide Voluntary Site Investigation was performed at the AlliedSignal Industrial Complex located at 717 North Bendix Drive, South Bend, Indiana (Ref. 23, pp. 5, 7, 8). During this investigation soil and groundwater at this location were characterized (Ref. 23, p. 7). Soil samples collected at the property have been shown to contain arsenic at concentrations of 38 mg/kg in a soil sample collected from 11GP005; 32 mg/kg in a soil sample collected from 12GP003; and 47 mg/kg in a soil sample collected from 13GP001 (Ref. 23, pp. 142, 406, 416). Groundwater samples collected from the site have been shown to exceed the MCL of 10 µg/l for arsenic in samples collected from 13GP004 (27 µg/l), MW-8 (20 µg/l), 09GP002 (17 µg/l), 17GP001 (21 µg/l) and MW-6 (12 µg/l) (Ref. 23, pp. 423, 541, 624, 626, 636, 637). The level of arsenic contamination in the soil and groundwater suggest that arsenic is most likely associated with operations at AlliedSignal Facility. The Bendix Corporation, under a merger, became part of Allied Corporation, which later became AlliedSignal, Inc (Ref. 24, p. 1).

Hazardous Substance in the Release

Arsenic

5.1 RESIDENT POPULATION THREAT

5.1.1 Likelihood Of Exposure

Table 7 lists surface soil samples collected in October 2009 from residential properties located within AOC A (see Figure 3 of this HRS documentation record). Reference 21 shows approximate radius of 200-feet from the sample locations S6, S8, and S14 and illustrates that residences are within the same property boundaries.

Table 7: Likelihood of Exposure			
Sample ID/ CLP ID	Sample Date	Distance of Population from Area of Observed Contamination	References
S6/2QT6	10/6/09	Less than 200 feet	Refs. 5, pp. 35, 61;13, p. 7; 17, p.11; 21, p. 1
S8/2QT8	10/6/09	Less than 200 feet	Refs. 5, pp. 61;13, p. 9; 17, p.11; 21, p. 2
S14/2QW4	10/6/09	Less than 200 feet	Refs. 5, p. 132;13, p. 14; 17, p. 63; 21, p.3

Notes:

CLP = Contract Laboratory Program.

ID = Identification

Resident Population Threat Likelihood of Exposure Factor Category Value: 550
(Ref. 1, Section 5.1.1)

5.1.2 Waste Characteristics

5.1.2.1 Toxicity

The toxicity values for the hazardous substances detected in the area of observed contamination samples are summarized in Table 8.

Table 8: Soil Exposure Toxicity		
Hazardous Substance	Toxicity Factor Value	Reference
Arsenic	10,000	2, pp. BI-1, A-30

Toxicity Factor Value: 10,000
(Ref. 1, Section 5.1.2.1)

5.1.2.2 HAZARDOUS WASTE QUANTITY

Hazardous Constituent Quantity

The information available is not sufficient to evaluate Tier A as required in Section 2.4.2.1.1 of the HRS, which is to determine total mass of the hazardous substance present in the waste source. The lack of manifests detailing waste quantities, PRP records, State records, permits etc. does not support the use of Tier A. The mass of all the hazardous substances has not been determined as a result, the evaluation of Hazardous Waste Quantity proceeds to the evaluation of Tier B, hazardous wastestream quantity (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Assigned Value: NS

Hazardous Wastestream Quantity

There is not sufficient information to evaluate Tier B which requires determining mass of the hazardous wastestreams that are allocated to the source as required in the HRS (Ref. 1, Section 2.4.2.1.2). Because the original source of contamination is unknown, the hazardous wastestream quantity cannot be calculated and the evaluation of Hazardous Waste Quantity proceeds to the evaluation of Tier C, volume (Ref. 1, Section 2.4.2.1.2).

Hazardous Wastestream Quantity Assigned Value: NS

Volume

The area of observed contamination is not a surface impoundment, drums, or tanks and containers other than drums, as required to evaluate Tier C, volume, by Reference 1, Section 5.1.2.2, and Table 5-2.

Volume Assigned Value: 0

Area

AOC A consists of contaminated soil at the residential area to the west of the park (see Figure 2 of this HRS documentation record). Areas covered by structures and impervious surfaces are excluded from the AOC. Although three soil samples are included in site scoring, two of the three samples are in close proximity, such that for practical purposes only two samples exist to

define the AOC and between the two samples there is an area where arsenic was detected at concentrations below three times the background concentrations. Therefore, the area of AOC A is undetermined, but greater than zero (Ref. 1, Section 5.1.2.2).

Sum (square feet [ft²]): >0

Equation for Assigning Value (Ref. 1, Table 5-2): Area (A)/34,000

Area Assigned Value: >0

Hazardous Waste Quantity Value

AOC A is assigned an Hazardous Waste Quantity (HWQ) value of greater than zero, but undetermined (Ref. 1, Section 5.1.2.2).

HWQ Value: >0

Table 9: Hazardous Waste Quantity		
Area of Observed Contamination Letter	Type	Area Hazardous Waste Quantity
A	Contaminated Soil	Undetermined, greater than zero (> 0)

The hazardous constituent quantity for AOC A is not adequately determined. The HWQ is undetermined, but greater than zero. Per HRS Section 2.4.2.2, for the soil exposure pathway, the HWQ factor value is the higher of either the value from HRS Table 2-6 or 10.

Hazardous Waste Quantity Factor Value: 10
(Ref. 1, Section 2.4.2.2)

5.1.2.3 Calculation of Waste Characteristics Factor Category Value

The waste characteristics factor category was obtained by multiplying the toxicity and HWQ factor values. Based on this product, a value was assigned in accordance with Reference 1, Table 2-7.

Toxicity Factor Value (see Table 8 of this HRS documentation record): 10,000
Hazardous Waste Quantity Factor Value: 10

Toxicity Factor Value \times
Hazardous Waste Quantity Factor Value: 1×10^5

Waste Characteristics Factor Category Value: 18
(Ref. 1, Table 2-7)

5.1.3 Resident Population Threat Targets

The soil samples listed in Table 10 were collected during the IDEM October 2009 ESI 2 (Refs. 5, p. 17; 13, pp. 7, 9, 10, 14). Surface soil sample S6 was collected from one parcel and surface soil samples S8 and S14 were collected from another parcel (Refs. 21, p.1; 22, p.1; 25, p.1; 28, p.1)

Level I Concentrations

During the IDEM October 2009 ESI 2 investigation, soil samples were collected from LaSalle Park and residential properties (Refs. 5, pp. 17, 18; 14, p. 1). Surface soil (0 to 6 inches bgs) samples were collected from the housing complex of subsidized housing and apartments called LaSalle Park Homes (Refs. 5, pp. 17, 18; 13, pp. 7, 9, 10, 14; 14, p. 1). LaSalle Park Homes fronts Falcon Street the length of the west boundary of the LaSalle Park from north to south (Refs. 5, p.12; 14, p. 1) (see Figure 2 of this HRS documentation record). Soil samples were analyzed by EPA CLP laboratory, A4 Scientific in The Woodland, Texas (Ref. 17, pp. 3, 11, 55, 63). All samples were analyzed for metals and cyanide using CLP SOW ILM05.4 (Refs. 5, pp. 127, 128; 17, pp. 4, 11, 56, 63). See Figure 3 for sampling locations.

TABLE 10: AOC A Level I Concentrations						
Sample ID/CLP ID	Hazardous Substance	Hazardous Substance Concentration	Background Concentration	Benchmark Concentration	Benchmark	Reference
S6/ME2QT6	Arsenic	34.3 mg/kg	9.7 mg/kg	0.43 mg/kg	CRSC	2, p. BII-13; 5, pp. 20, 39, 55-59, 61;13, p. 7; 17, pp.11, 22;
S8/ME2QT8	Arsenic	29.4 mg/kg	9.7 mg/kg	0.43 mg/kg	CRSC	2, p. BII-13; 5, pp. 20, 55-59, 61;13, p. 9; 17, pp.11, 24;
S14/ME2QW4	Arsenic	30.8 mg/kg	9.7 mg/kg	0.43 mg/kg	CRSC	2, p. BII-13; 5, pp. 20, 127-132; 13, p. 14; 17, pp. 63, 68;

Notes:

AOC = Area of observed contamination

CLP = Contract Laboratory Program

CRSC = Cancer Risk Screening Concentration

ID = Identification

mg/kg = Milligrams per kilogram

5.1.3.1 Resident Individual

As previously stated in this HRS documentation record, surface soil samples were collected within two-feet of the surface in exposed soil areas from residential yards and within 200 feet of residences. Sample S6 was collected from a parcel owned by LaSalle Park Homes and a multifamily senior residence is located on this parcel (Refs. 21, p. 1; 22, p.1; 25, p.1; 28, p. 1) . Samples S8 and S14 were collected from a single parcel owned by LaSalle Park Homes on which several homes are located (Refs. 21, pp. 2, 3; 25, p.1; 27, p. 3,4; 28, p.1). The residential structures in the area of concern are each less than 200 feet from, and on the same property with, a sample meeting the observed contamination criteria (surface soil samples S6, S8, and S14) (Refs. 1, Sec. 5.0.1; 21, pp. 1-3); therefore, residential properties where soil sample analytical results indicate observed contamination of arsenic are less than 200 feet from areas of observed contamination (see Tables 5, 6 and Figure 2 of this HRS documentation record). The cancer risk

screening concentration for arsenic is 0.43 mg/kg (Refs. 1, Sec. 5.1.3.1, p. 51647; 2, p. BII-13). Thus, a resident is subject to Level I concentrations and a value of 50 is assigned.

Area of Observed Contamination Letter: A

Level of Contamination (Level I/Level II): I

References: 1, p. 51647; 2, p. BII-13; 5, pp. 22, 39, 61, 132; 13, pp. 7, 9, 10, 14; 17, pp.11, 22, 28, 63, 68; 21, p. 1-3.

Resident Individual Factor Value: 50
(Ref. 1, Section 5.1.3.1)

5.1.3.2 Resident Population

The samples listed in Table 11 and Table 12 below were collected during the October 2009 ESI 2 sampling event conducted by IDEM (see Tables 5 and 6 of this HRS documentation record). Surface soil (less than 6 inches bgs) samples collected from LaSalle Park Homes property during the 2009 ESI 2 contained arsenic at Level I concentrations (see Table 10 of this HRS documentation record).

5.1.3.2.1 Level I Population

Three sample locations, S6, S8 and S14, contained arsenic at Level I concentrations (see Table 6 of this HRS documentation record). Sample S6 was collected from a parcel owned by LaSalle Park Homes and a multifamily senior residence is located on this parcel (Refs. 21, p. 1; 22, p.1; 25, p.1; 28, p. 1) . Samples S8 and S14 were collected from a single parcel owned by LaSalle Park Homes on which several homes are located (Refs. 21, pp. 2, 3; 25, p.1; 27, p. 3,4; 28, p.1). The residences that are within approximately 200 feet of these three sampling locations are depicted in Reference 21. The Level I Resident Population Targets that are within 200 feet of sample S6 are listed in Table 11 of this HRS documentation record. The Level I Resident Population Targets that are within 200 feet of sample S8 are listed in Table 12 of this HRS documentation record. The Level I Resident Population Targets that are within 200 feet of sample S14 are listed in Table 13 of this HRS documentation record.

Table 11: Level I Resident Population Targets Sample S6				
Area of Observed Contamination Letter	Sample ID	Number of Residences	Total Number of Residents	References
Senior Residence Building 3505 West Washington				
A	S6	43	41	Refs. 13, p. 7; 14, p.1; 21, p.1; ; 25, p.1; 26, p. 2;27, p. 2; 28, p.1
Sub Total			41	

Notes:

ID = Identification

Table 12: Level I Resident Population Targets Sample S8				
Area of Observed Contamination Letter	Sample ID	Number of Residences	Total Number of Residents	References
Residences 135 Falcon Street				
A	S8	1	2	Refs. 13, pp. 9, 10; 14, p.1; ; 21, p.2; 25, p.1; 26, p. 2;27, p.3; 28, p. 1
Residences 137 North Falcon Street				
A	S8	1	3	Refs. 13, p. 14; 14, p.1; 21, p.2; 25, p.1; 26, p. 2;27, p. 3; 28, p.1
Residences 143 North Falcon Street				
A	S8	1	7	Refs. 13, p. 14; 14, p.1; 21, p.2; 25, p.1; 26, p. 2;27, p.3; 28, p. 1.
Residences 145 North Falcon Street				
A	S8	1	5	Refs. 13, p. 14; 14, p.1; 21, p.2; 25, p.1; 26, p. 2;27, p. 3; 28, p.1.
Residences 149 North Falcon Street				
A	S8	1	4	Refs. 13, p. 14; 14, p.1; 21, p.2; 25, p.1; 26, p. 2;27, p. 3; 28, p.1.
Sub Total			21	

Notes:

ID = Identification

Table 13: Level I Resident Population Targets Sample S14				
Area of Observed Contamination Letter	Sample ID	Number of Residences	Total Number of Residents	References
Residences 209 North Falcon Street				
A	S14	1	1	Refs. 13, p. 14; 14, p.1; 21, p.3; 25, p.1; 26, p. 2;27, p. 4; 28, p. 1
Residences 211 Falcon Street				
A	S14	1	1	Refs. 13, p. 14; 14, p.1; 21, p. 3; 26, p. 2;27, p. 4; 28, p. 1
Residences 215 North Falcon Street				
A	S14	1	1	Refs. 13, p. 14; 14, p.1; 21, p.3; 26, p. 2;27, p. 4; 28, p. 1
Residences 217 North Falcon Street				
A	S14	1	1	Refs. 13, p. 14; 14, p.1; 21, p.3;26, p. 2;27, p. 4; 28, p. 1
Residences 225 North Falcon Street				
A	S14	1	4	Refs. 13, p. 14; 14, p.1; 21, p.3;26, p. 2;27, p. 4; 28, p. 1
Residences 227 North Falcon Street				
A	S14	1	4	Refs. 13, p. 14; 14, p.1; 21, 26, p. 2;27, p. 4; 28, p. 1
Residences 229 North Falcon Street				
A	S14	1	5	Refs. 13, p. 14; 14, p.1; 21, p.3; 26, p. 2;27, p. 4; 28, p. 1
Residences 233 North Falcon Street				
A	S14	1	3	Refs. 13, p. 14; 14, p.1; 21, p.3; 26, p. 2;27, p. 4; 28, p. 1
Residences 235 North Falcon Street				
A	S14	1	3	Refs. 13, p. 14; 14, p.1; 21, p.3; 26, p. 2;27, p. 4; 28, p. 1
Residences 237 North Falcon Street				
A	S14	1	2	Refs. 13, p. 14; 14, p.1; 21, p.3; 26, p. 2;27, p. 4; 28, p. 1
Residences 239 North Falcon Street				
A	S14	1	2	Refs. 13, p. 14; 14, p.1; 21, p.3;26, p. 2;27, p. 4; 28, p. 1
Sub Total			27	

Notes:

¹ ID = Identification

Sum of individuals subject to Level I concentrations: $41+21+27 = 89$

Sum of individuals subject to Level I concentrations $\times 10$: $89 \times 10 = 890$

Level I Concentrations Factor Value: 890
(Ref. 1, Section 5.1.3.2.1)

5.1.3.2.2 Level II Concentrations

Level II Concentrations for the Resident Population Threat was not scored (NS) because Level I Concentration Resident Population threat is sufficient to qualify the site for the NPL. This threat is of concern to EPA and may be considered during a future evaluation (Ref. 1, Table 5-6).

Level II Concentrations Factor Value: NS

5.1.3.3 Workers

Total workers were not scored (NS)

Workers Factor Value: NS

5.1.3.4 Resources

Resource Description: There are no commercial agriculture, silviculture, or commercial livestock production or grazing within the area of observed contamination.

Resources Factor Value: 0

5.1.3.5 Terrestrial Sensitive Environments

Sensitive Environment Description: There are no terrestrial sensitive environments identified within the area of observed contamination.

Terrestrial Sensitive Environments Factor Value: 0

5.2 NEARBY POPULATION THREAT

Nearby population threat was not scored.

Nearby Population Threat Factor Value: NS